



WLLA0005A

15- 500 MHz LOW NOISE WIDE BAND LIMITER AMPLIFIER

REV A
September 2017

Key Features



- 50 Ohm Impedance
- 15 ~ 500 MHz
- 0.60 dB Noise Figure
- 27.0 dBm Output IP₃
- 22.0 dB Gain
- 15.0 dBm P_{1dB}
- 16.0 dB Return Losses
- 2.0 uS Recovery Time
- Single DC Power Supply
- >34 Years MTBF
- RoHS Compliant

Product Description

WLLA0005A is integrated with WanTcom proprietary low noise amplifier technology, high frequency micro electronic assembly techniques, and high reliability design to realize optimum low noise figure, wideband matching, and high linearity performances together. With single DC operation, the amplifier has optimal input and output matching in the specified frequency range at 50-Ohm impedance system. The amplifier has standard SMA Female connectorized Gold plated WP-10E housing.

The amplifier is designed to meet the rugged standard of MIL-STD-202g.

CAUTION:



ELECTROSTATIC DISCHARGE SENSITIVE

Applications

- Mobile Infrastructures
- VHF & UHF
- CATV/DBS
- WiMAX
- Security System
- Measurement
- Fixed Wireless



Specifications

Summary of the electrical specifications at room temperature

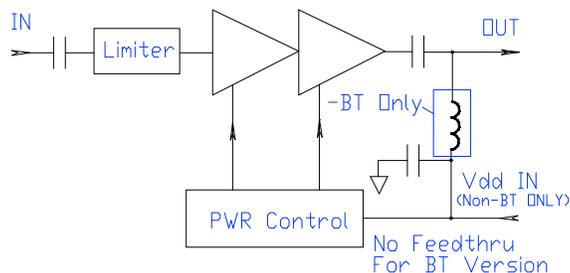
Index	Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
1	Gain	S ₂₁	15 – 500 MHz		22		dB
2	Gain Variation	ΔG	15 – 500 MHz		+/- 0.5	+/-1.0	dB
3	Input VSWR	VSWR ₁	15 – 500 MHz		1.6:1	1.8:1	Ratio
4	Output VSWR	VSWR ₂	15 – 500 MHz		1.25:1	1.5:1	Ratio
5	Reverse Isolation	S ₁₂	15 – 500 MHz	20	22		dB
6	Noise Figure	NF	15 – 500 MHz		0.60	1.2	dB
7	Output 1dB Gain Compression Point	P _{1dB}	15 – 500 MHz	12	15		dBm
8	Output-Third-Order Interception Point	IP ₃	Two-Tone, P _{out} = +0 dBm each, 1 MHz separation		27		dBm
9	Current Consumption	I _{dd}	V _{dd} = +5 V		40		mA
10	Saturated Power Recovery Time	t _{rec}	After Pin = 20 dBm CW		2.0	4.0	uS
11	Power Supply Voltage	V _{dd}	WLLA0005A	+4.7	+5	+5.3	V
			WLLA0005B	+8.0		+16.0	
12	Thermal Resistance	R _{th,c}	Junction to case			220	°C/W
13	Operating Temperature	T _o		-40		+85	°C
14	Input Maximum RF CW Power	P _{IN, MAX}	DC – 6.0 GHz			30	dBm

Absolute Maximum Ratings

Parameters	Units	Ratings
DC Power Supply Voltage	V	6.0 (+16V for -B version)
Drain Current	mA	75
Total Power Dissipation	mW	450
Input Maximum RF CW Power	dBm	30
Channel Temperature	°C	150
Storage Temperature	°C	-65 ~ 150
Operating Temperature	°C	-54 ~ 100
Thermal Resistance	°C/W	220

Operation of this device above any one of these parameters may cause permanent damage.

Functional Block Diagram



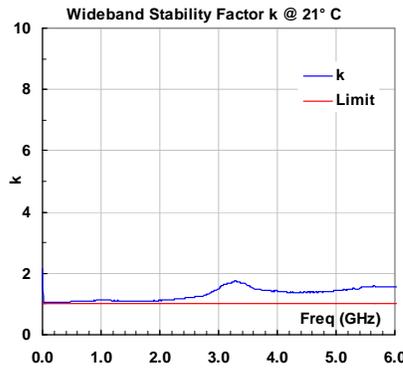
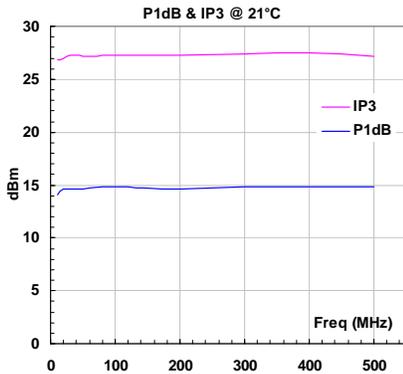
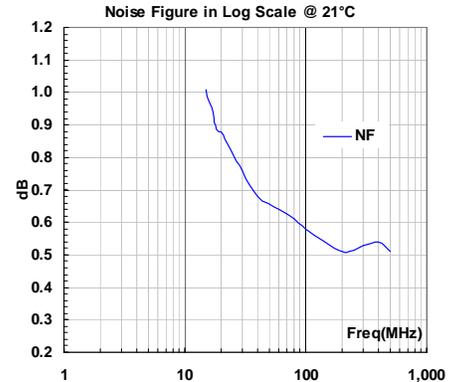
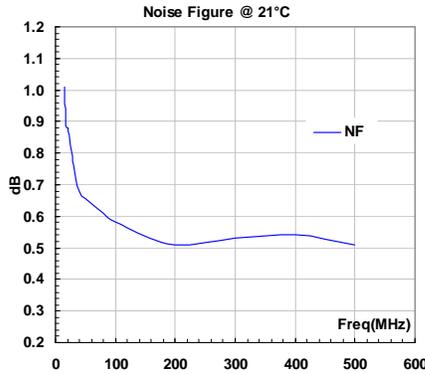
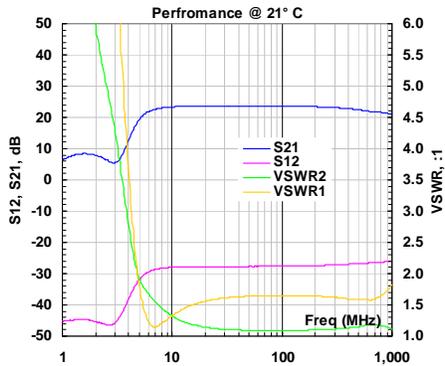
Ordering Information

Model Number	Without Output Bias-T	With Output Bias-T
V _{dd} = +5.0V	WLLA0005A	WLLA0005ABT
V _{dd} = +8.0V ~ +16.0V	WLLA0005B	WLLA0005B

Specifications and information are subject to change without notice.

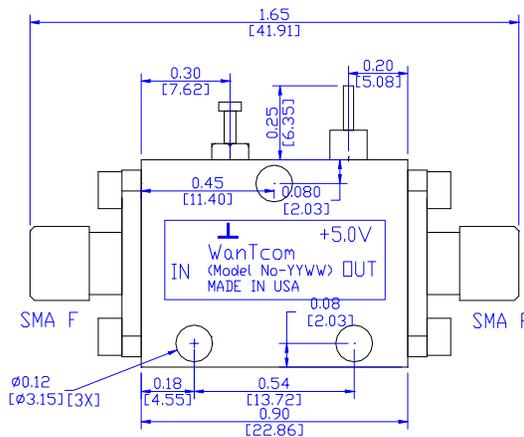


Typical Data

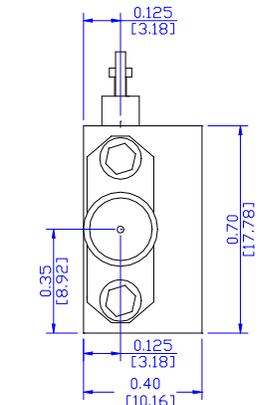


Outline, WP-10E Housing

UNITS: INCH
[mm]
BODY: Brass
Finish: Gold Plating
RF Connectors: SMA F Gold
V_{dd} PWR: Feed through



UNITS: INCH Tolerance: X.XX +/- 0.010"
[mm] X.XXX +/- 0.005"



Base Material: Brass.
Finish: Gold Plating.
RF I/O: SMA Female



Application Notes:

SMA Torque Wrench Selection

Always use a torque wrench with 5 ~ 6 inch-lb coupling torque setting for mating the SMA cable connectors to the amplifier connectors. Never use torque more than 8 inch-lb wrench for tightening the mating cable connectors to the amplifier connectors. Otherwise, the permanent damage may occur to the SMA connectors of the amplifier. 8710-1582 (5 inch-lb) wrench from Agilent Technology is one of the ideal examples.

DC Power Line Connection

Strip the insulation layer at the end of a DC power supply wire. The stripped distance should be in the range of 0.100" to 0.200". The 24 ~ 26 American Wire Gauge wire is suitable. Wound the stripped terminal wire about 1 turn on the DC feed thru center pin. Solder the wounded wire and the center pin together. Clean the soldering area by Q-tip with alcohol to remove the flux and residue.

Repeat the process to solder the DC return wire on the ground turret. It is always helpful to use different color wires for DC wire and ground wire, such as red and black one.

Mounting the Amplifier

Use three pieces of #4-40 with longer than 9/16" screws for mounting the amplifier on a metal-based chase. Flat and spring washers are needed to prevent the screw loosening during the shock and vibration. Always use the appropriate torque setting of the power screwdriver to mount them.
